

Stormwater Runoff Analysis

"Silver Spring Marina"

Proposed Site Improvements
Assessor's Map 63-3, Lot 60
362 Pond Street
South Kingstown, RI

Prepared For

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April 2022



TABLE OF CONTENTS

1.0	PROJECT NARRATIVE.....	3
1.1	SITE INFORMATION	3
1.2	EXISTING IMPROVEMENTS AND SITE CONDITIONS	3
1.3	PROTECTED FEATURES	3
1.4	SITE TERRAIN AND SOILS.....	3
1.5	PROPOSED IMPROVEMENTS	4
2.0	PROPOSED ALTERATIONS AND STORMWATER CONSIDERATIONS	4
2.1	STORMWATER SYSTEM OBJECTIVES.....	4
2.2	REDEVELOPMENT SITE	4
2.3	MINIMUM STORMWATER MANAGEMENT STANDARDS	5
2.3.1	MINIMUM STANDARD 1: LID SITE PLANNING AND DESIGN STRATEGIES.....	5
2.3.2	MINIMUM STANDARD 2: GROUNDWATER RECHARGE.....	5
2.3.3	MINIMUM STANDARD 3: WATER QUALITY	5
2.3.4	MINIMUM STANDARD 4: CONVEYANCE AND NATURAL CHANNEL PROTECTION	5
2.3.5	MINIMUM STANDARD 5: OVERBANK FLOOD PROTECTION	5
2.3.6	MINIMUM STANDARD 6: REDEVELOPMENT AND INFILL PROJECTS.....	5
2.3.7	MINIMUM STANDARD 7: POLLUTION PREVENTION	6
2.3.8	MINIMUM STANDARD 8: LAND USES WITH HIGHER POTENTIAL POLLUTANT LOADS.....	6
2.3.9	MINIMUM STANDARD 9: ILLICIT DISCHARGES	6
2.3.10	MINIMUM STANDARD 10: SOILS EROSION AND SEDIMENT CONTROL.....	6
2.3.11	MINIMUM STANDARD 11: STORMWATER MANAGEMENT OPERATIONS AND MAINTENANCE	6
3.0	STORMWATER BMPS	7
3.1	SAND FILTER	7
3.2	SEDIMENT FOREBAY	7
4.0	CONSTRUCTION STORMWATER MAINTENANCE PLAN	8
5.0	LIMITATIONS AND SPECIAL TERMS AND CONDITIONS	9



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APPENDIX A FIGURES

APPENDIX B SUPPLEMENTARY CALCULATIONS

APPENDIX C RISDISM STORMWATER CHECKLIST (APPENDIX A)



1.0 PROJECT NARRATIVE

1.1 SITE INFORMATION

City / Town:	South Kingstown, Rhode Island
Adjacent Roadways:	Pond Street
Lot(s) identification:	A.P. 63-3 Lot 60
Current Use:	Marina / Boatyard
Site Area:	3.27 Acres
FEMA Zone and Map:	Zone "VE (EL13)" and "AE (EL12)" (Panel 44005C0177J)

1.2 EXISTING IMPROVEMENTS AND SITE CONDITIONS

The existing property functions as a marina and boatyard located on Silver Spring Cove in South Kingstown. A stone seawall runs along the coastline from which multiple wooden docks and a travel lift are arranged. Several structures are present on site which include a maintenance barn, a store/office, and a pool house. The remainder of the site consists of paved and gravel surfaces. Minimal coastal vegetation lies along the manmade coastal feature. Additional vegetation is present between the site and Pond Street, the municipal roadway from which the site is accessed. The site is served by public water and a private sewer disposal system (OWTS). There are no stormwater controls or treatment devices present on the property.

1.3 PROTECTED FEATURES

The site lies within the 50-foot setback from the coastal feature associated with Silver Spring Cove. Silver Spring Cove is identified as CRMC Type 3 waters. Based on field observation and RIDEM environmental resource mapping, there are no wetlands or any significant coastal vegetation located on the property. The majority of the property lies within the 200-foot CRMC jurisdictional area. Any development of this portion of the property would require assent from the CRMC.

1.4 SITE TERRAIN AND SOILS

In general, the site slopes from the west towards the coastal waters. The grade drops sharply near the coast line and the stone seawall. The soil types on site are UD (Udorthents) and UrS (Urban land) as designated by the USDA Natural Resource Conservation Service. This are generally type C hydrologic soil common to developed coastal urban areas. The water table is likely tidally influenced to the proximity of the coastal waters.

1.5 PROPOSED IMPROVEMENTS

The owner intends to construct a 10,000 square foot marine services structure within the existing gravel parking lot. Some clearing of the existing vegetation adjacent to Pond Street will be required to flatten the grade such that the single-story structure can be built. The gravel surfacing will circumvent the new structure. A short retaining wall will be required along the southern property line for proper grading of the gravel aisle. The structure will be located approximately 185 feet from the seawall, and approximately 52 feet from the water line on the abutting property to the south. The structure will be served by water and electrical by tapping the existing services on the property. steep slopes present on the coastal areas of the site are problematic for both parking and seasonal boat storage.

In order to treat stormwater from the redeveloped and new gravel parking surfaces, a surface sand filter with preceding sediment forebay is proposed. These devices are proposed at the southeastern corner of the property, replacing an existing gravel surface. The sediment forebay will intercept surface runoff from the gravel surfaces and roof downspouts. Stormwater will overflow the forebay in the sand filter. Treated stormwater will infiltrated into the ground beneath the sand media and overflow water will pass over a concrete weir to a riprap spillway and then over the stone seawall. These devices have been designed in accordance with state design standards.

2.0 PROPOSED ALTERATIONS AND STORMWATER CONSIDERATIONS

2.1 STORMWATER SYSTEM OBJECTIVES

The objectives of the project stormwater system are to accomplish the following:

- **Provide water quality treatment for stormwater runoff in accordance with the Rhode Island Stormwater Design and Installation Standards Manual.**
- **Maintain the overall drainage patterns from the site to the extent practicable.**

2.2 REDEVELOPMENT SITE

As the existing site lot coverage consists of more than 40% impervious and more than 10,000 square feet of this impervious surface is to be developed, this project qualifies as a "redevelopment site" per section 3.2.6 of the RISDISM. Per this section of the Manual, only Standards, 2, 3, and 7-11 must be addressed. Specifically, stormwater quality shall be managed in accordance with one or more of the following techniques:

- Reduce existing impervious area by at least 50% of the redevelopment area;
- Implement other LID techniques to the maximum extent practicable to provide recharge and water quality management for at least 50% of the redevelopment area;
- Use on-site structural BMPs to provide recharge and water quality management for at least 50% of the redevelopment area.

2.3 MINIMUM STORMWATER MANAGEMENT STANDARDS

2.3.1 MINIMUM STANDARD 1: LID SITE PLANNING AND DESIGN STRATEGIES

The proposed development utilizes LID designs conforming to the RISDISM. These elements are located immediately downstream of the new improvements and will directly treat the newly generated runoff with minimal interception of clean runoff. This standard is not required for qualifying redevelopment sites per section 3.2.6 of the RISDISM.

2.3.2 MINIMUM STANDARD 2: GROUNDWATER RECHARGE

A portion of this standard shall be met by reducing the area of post construction impervious surfaces via the redevelopment standard. After applying the redevelopment credit for new pervious surfaces, a remainder of **10,200** square feet of impervious surfaces requires groundwater recharge. This equates to a total of **213** cubic feet of groundwater recharge. This will be addressed by the sand filter infiltration. Refer to Appendix B for sizing calculations of these devices.

2.3.3 MINIMUM STANDARD 3: WATER QUALITY

A portion of this standard shall be met by reducing the area of post construction impervious surfaces via the redevelopment standard. After applying the redevelopment credit for new pervious surfaces, a remainder of **10,200** square feet of impervious surfaces require water quality treatment. This equates to a total of **850** cubic feet of water quality treatment. This will be addressed by the sand filter as previously indicated. Pretreatment will be provided by a sediment forebay. Refer to Appendix B for sizing calculations of these devices.

2.3.4 MINIMUM STANDARD 4: CONVEYANCE AND NATURAL CHANNEL PROTECTION

This standard is not required for qualifying redevelopment sites per section 3.2.6 of the RISDISM.

2.3.5 MINIMUM STANDARD 5: OVERBANK FLOOD PROTECTION

This standard is not required for qualifying redevelopment sites per section 3.2.6 of the RISDISM.

2.3.6 MINIMUM STANDARD 6: REDEVELOPMENT AND INFILL PROJECTS

As stated in section 2.2 above, this project qualifies as a development project. The site is comprised of **3.27** acres of which **approximately 2.74** acres are existing impervious surfaces. This equates to approximately **84%**. Only **40%** is required to qualify as a redevelopment site.



2.3.7 MINIMUM STANDARD 7: POLLUTION PREVENTION

Source controls and pollution prevention measures will be present during all phases of construction. A separate stormwater pollution prevention plan (Soil Erosion and Sediment Control Narrative) has been prepared and submitted with this document.

2.3.8 MINIMUM STANDARD 8: LAND USES WITH HIGHER POTENTIAL POLLUTANT LOADS

The use of this property does not qualify as a LUHPPL and does not require any specific source controls, limited BMPs, or and additional state permitting.

2.3.9 MINIMUM STANDARD 9: ILLICIT DISCHARGES

Neither the using use nor any proposed uses will include any discharges considered to be "illicit" per this section of the Manual.

2.3.10 MINIMUM STANDARD 10: SOILS EROSION AND SEDIMENT CONTROL

Soil erosion and sediment control measures will be implemented during all phases of construction. A separate Soil Erosion and Sediment Control Narrative has been prepared and submitted with this document

2.3.11 MINIMUM STANDARD 11: STORMWATER MANAGEMENT OPERATIONS AND MAINTENANCE

An Operations and Maintenance (O&M) Document will be prepared and submitted in addition to this narrative. This document satisfies the minimum requirements of this standard.



3.0 STORMWATER BMPS

3.1 SAND FILTER

The sand filter is designed to capture and temporarily store the water quality storm runoff volume and pass it through a sand media layer. This treated runoff is then infiltrated into the undisturbed strata below the filter. High flow runoff passes over a concrete overflow weir to a riprap spillway. The sand filter is not intended to have a permanent pool and should drain within 24 hours. The filter bed should be planted with water tolerant grasses selected from the Rhode Island Coastal Plant Guide or Appendix B of the RIDISM. Refer to Appendix B for the sizing of this device.

3.2 SEDIMENT FOREBAY

The sediment forebay is a pre-treatment device which intercepts surface runoff from the gravel travel aisles and the roof of the marine services building. Bulk sediments settle in this basin before overflow water passes over a stone weir and entering the sand filter. The Inlet and outlet of the sediment forebay should be protected by rip-rap. The sediment forebay is lined with stone and is not intended to have a pool.

4.0 CONSTRUCTION STORMWATER MAINTENANCE PLAN

During the period of construction and/or until long term vegetation is established, the erosion control measures shall be inspected.

- A. Straw wattle / filter socks shall be installed along the downslope edge of any exposed erodible areas. At a minimum these devices shall be inspected and repaired once a week and/or immediately following a significant rainfall or snowmelt. Sediment trapped behind these barriers shall be excavated when it reaches a depth of 6" and regraded on the site.
- B. Any erosion control blankets employed throughout the site shall be inspected on a weekly basis.
- C. Any stone construction entrance(s) shall be inspected weekly, and re-established or repaired as necessary. These devices shall be inspected monthly for excessive accumulation of sediment. It may be necessary to remove stones, excavate sediment, and replace stones.
- D. Seeded areas shall be fertilized and reseeded as necessary to ensure establishment of a vegetative growth that meets the approval of reviewing entities.
- E. Maintenance of the stormwater system during construction shall be the responsibility of the site contractor. Once construction of the site is complete, maintenance of the system shall be the responsibility of the owner.



5.0 LIMITATIONS AND SPECIAL TERMS AND CONDITIONS

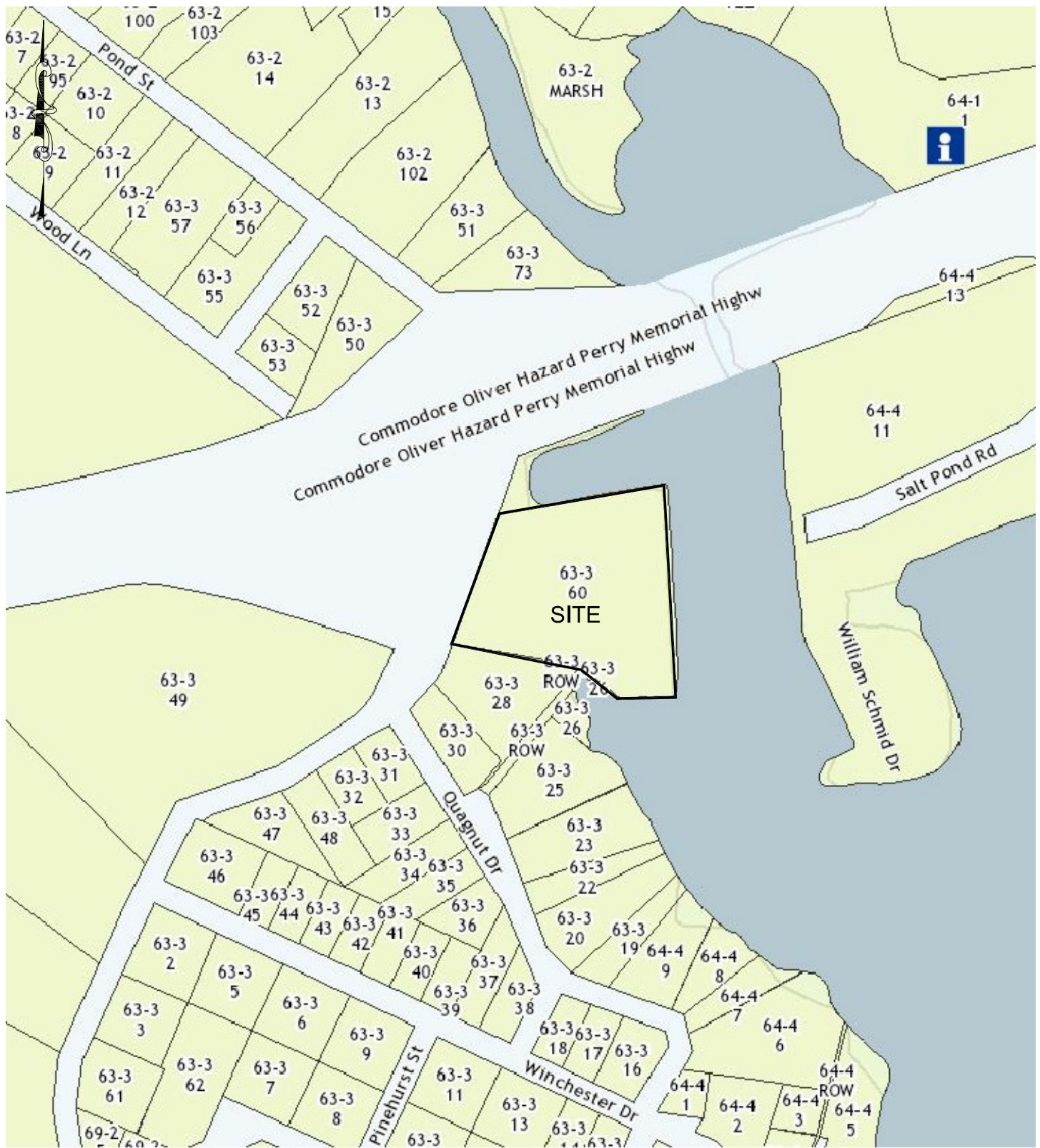
1. NE&C's evaluation was performed in accordance with generally accepted practices of other consultants undertaking similar studies at the same time and in the same geographical area, and NE&C observed the degree of care and skill generally exercised by other consultants under similar circumstances and conditions. No warranty expressed or implied is made.
2. Any additional research conducted should be reviewed by Northeast Engineers & Consultants, Inc., such that the conclusions presented herein may be modified.
3. All observations documented in this report were performed under the existing conditions at the time of the assessment.
4. This report has been prepared on the behalf of and is for the exclusive use of the Client. This report and findings contained herein shall not, in whole or in part be disseminated or conveyed to any party, nor used by any other party in whole or in part, without the written consent of NE&C.



APPENDIX A FIGURES



Scale:	NTS	Date:	15APR22	Designed By:	JJR	Drawn By:	JJR	Checked By:	GES
Project Title:				Drawing Title:					
SILVER SPRING MARINA SOUTH KINGSTOWN, RI				AERIAL IMAGERY					
Issued for:				Drawing Number:		Project Number:			
PERMITTING				FIG 1		20244.0			



Scale:	NTS	Date:	15APR22	Designed By:	JJR	Drawn By:	JJR	Checked By:	GES
Project Title:				Drawing Title:					
SILVER SPRING MARINA SOUTH KINGSTOWN, RI				LOCUS MAP					
Issued for:				Drawing Number:		Project Number:			
PERMITTING				FIG 2		20244.0			



APPENDIX B SUPPLEMENTARY CALCULATIONS



Redevelopment Area Calculations

Project: 20244.0 Silver Springs

Redevelopment Water Quality Credit Calculation (RIDEM Minimum Standard 6):

Total Site Area (TSA) =	142,365	sf		
Jurisdictional Wetlands (JW) =	0	sf		
Conservation Land (CL) =	0	sf		
Site Size (TSA-JW-CL) =	142,365	sf		
Existing Impervious =	119,183	sf	% Impervious =	84%
Proposed Impervious =	121,230	sf	% Impervious =	85%

Redeveloped Impervious (DI) =	22,000	sf
Net New Pervious Area (NIP) =	800	sf

**Remaining Stormwater
Treatment Area (STA) =**

$$(DI \times 50\%) \quad - \quad (NIP) \quad = \quad STA \quad = \quad 10,200 \text{ sf}$$

Results:

The area requiring water quality treatment is equal to STA. The volume of water quality treatment required is equal to one inch over this area.



Groundwater Recharge Calculations
Project: 20244.0 Silver Springs

Impervious Area*: 10,200 sf

Water Recharge Volume Calculations:

HSG	Recharge Factor (F)
A	0.60
B	0.35
C	0.25
D	0.10

Impervious Area: 10,200 sf F = 0.25

$$WRec_v = (\text{Impervious Area}) / 12 \times F$$

$$WRec_v = 213 \text{ cf}$$

Volume of Infiltration for a WQ storm**: 600 cf

* Remaining Area not addressed by redevelopment standards

** Minimum storage of sand filter



APPENDIX C RISDISM STORMWATER CHECKLIST (APPENDIX A)

APPENDIX A: STORMWATER MANAGEMENT PLAN CHECKLIST AND LID PLANNING REPORT – STORMWATER DESIGN SUMMARY

PROJECT NAME: “Silver Spring Marina Marine Services Building”	(RIDEM USE ONLY)
TOWN: South Kingstown, RI	STW/WQC File #:
BRIEF PROJECT DESCRIPTION: Construction of a new marine services building, associated grading, utilities, and stormwater quality controls.	Date Received:

Stormwater Management Plan (SMP) Elements – Minimum Standards

PART 1. PROJECT AND SITE INFORMATION

PROJECT TYPE (Check all that apply)

<input type="checkbox"/> Residential	<input checked="" type="checkbox"/> Commercial	<input type="checkbox"/> Federal	<input type="checkbox"/> Retrofit	<input type="checkbox"/> Restoration
<input type="checkbox"/> Road	<input type="checkbox"/> Utility	<input type="checkbox"/> Fill	<input type="checkbox"/> Dredge	<input type="checkbox"/> Mine
<input type="checkbox"/> Other (specify):				

SITE INFORMATION

Vicinity Map

INITIAL DISCHARGE LOCATION(S): The WQ_v discharges to: (You may choose more than one answer if several discharge points are associated with the project.) See [Guidance to identify receiving waters](#).

<input checked="" type="checkbox"/> Groundwater	<input type="checkbox"/> Surface Water	<input type="checkbox"/> MS4
<input type="checkbox"/> GAA	<input type="checkbox"/> Isolated Wetland	<input type="checkbox"/> RIDOT
<input checked="" type="checkbox"/> GA	<input type="checkbox"/> Named Waterbody	<input type="checkbox"/> RIDOT Alteration Permit is Approved
<input type="checkbox"/> GB	<input type="checkbox"/> Unnamed Waterbody Connected to Named Waterbody	<input type="checkbox"/> Town
<input type="checkbox"/> Other (specify):		

ULTIMATE RECEIVING WATERBODY LOCATION(S): Include pertinent information that applies to both WQ_v and flow from larger storm events including overflows. Choose all that apply, and repeat table for each waterbody.

<input checked="" type="checkbox"/> Groundwater or Disconnected Wetland	<input type="checkbox"/> SRWP
<input checked="" type="checkbox"/> Waterbody Name: Point Judith Pond	<input type="checkbox"/> Coldwater <input type="checkbox"/> Warmwater <input checked="" type="checkbox"/> Unassessed
<input checked="" type="checkbox"/> Waterbody ID: RI0010043E-06B	<input type="checkbox"/> 4 th order stream of pond 50 acres or more
<input checked="" type="checkbox"/> TMDL for: Fecal Coliform	<input type="checkbox"/> Watershed of flood prone river (e.g., Pocasset River)
<input type="checkbox"/> Contributes to a priority outfall listed in the TMDL	<input type="checkbox"/> Contributes stormwater to a public beach
<input type="checkbox"/> 303(d) list – Impairment(s) for:	<input type="checkbox"/> Contributes to shellfishing grounds

PROJECT HISTORY		
<input type="checkbox"/> RIDEM Pre- Application Meeting	Meeting Date:	<input type="checkbox"/> Minutes Attached
<input type="checkbox"/> Municipal Master Plan Approval	Approval Date:	<input type="checkbox"/> Minutes Attached
<input type="checkbox"/> Subdivision Suitability Required	Approval #:	
<input type="checkbox"/> Previous Enforcement Action has been taken on the property	Enforcement #:	
FLOODPLAIN & FLOODWAY See Guidance Pertaining to Floodplain and Floodways		
<input checked="" type="checkbox"/> Riverine 100-year floodplain: FEMA FLOODPLAIN FIRMETTE has been reviewed and the 100-year floodplain is on site		
<input checked="" type="checkbox"/> Delineated from FEMA Maps		
NOTE: Per Rule 250-RICR-150-10-8-1.1(B)(5)(d)(3), provide volumetric floodplain compensation calculations for cut and fill/displacement calculated by qualified professional		
<input type="checkbox"/> Calculated by Professional Engineer		
<input type="checkbox"/> Calculations are provided for cut vs. fill/displacement volumes proposed within the 100-year floodplain	Amount of Fill (CY):	
	Amount of Cut (CY):	
<input type="checkbox"/> Restrictions or modifications are proposed to the flow path or velocities in a floodway		
<input type="checkbox"/> Floodplain storage capacity is impacted		
<input type="checkbox"/> Project area is not within 100-year floodplain as defined by RIDEM		

CRMC JURISDICTION
<input checked="" type="checkbox"/> CRMC Assent required
<input type="checkbox"/> Property subject to a Special Area Management Plan (SAMP). If so, specify which SAMP:
<input type="checkbox"/> Sea level rise mitigation has been designed into this project

LUHPPL IDENTIFICATION - MINIMUM STANDARD 8:		
1. OFFICE OF WASTE MANAGEMENT (OWM)		
<input type="checkbox"/> Known or suspected releases of HAZARDOUS MATERIAL are present at the site (Hazardous Material is defined in Rule 1.4(A)(33) of 250-140-30-1 of the RIDEM Rules and Regulations for Investigation and Remediation of Hazardous Materials (the Remediation Regulations))		RIDEM CONTACT:
<input type="checkbox"/> Known or suspected releases of PETROLEUM PRODUCT are present at the site (Petroleum Product as defined in Rule 1.5(A)(84) of 250-140-25-1 of the RIDEM Rules and Regulations for Underground Storage Facilities Used for Regulated Substances and Hazardous Materials)		
<input type="checkbox"/> This site is identified on the RIDEM Environmental Resources Map as one of the following regulated facilities		SITE ID#:
<input type="checkbox"/> CERCLIS/Superfund (NPL)		
<input type="checkbox"/> State Hazardous Waste Site (SHWS)		
<input type="checkbox"/> Environmental Land Usage Restriction (ELUR)		
<input type="checkbox"/> Leaking Underground Storage Tank (LUST)		
<input type="checkbox"/> Closed Landfill		
Note: If any boxes in 1 above are checked, the applicant must contact the RIDEM OWM Project Manager associated with the Site to determine if subsurface infiltration of stormwater is allowable for the project. Indicate if the infiltration corresponds to "Red," "Yellow" or "Green" as described in Section 3.2.8 of the RISDISM Guidance (Subsurface Contamination Guidance). Also, note and reference approval in PART 3, Minimum Standard 2: Groundwater Recharge/Infiltration.		
2. PER MINIMUM STANDARD 8 of RICR 8.14.C.1-6 "LUHPPLS," THE SITE IS/HAS:		
<input type="checkbox"/> Industrial Site with RIPDES MSGP, except where No Exposure Certification exists. http://www.dem.ri.gov/programs/water/permits/ripdes/stormwater/status.php		
<input type="checkbox"/> Auto Fueling Facility (e.g., gas station)		
<input type="checkbox"/> Exterior Vehicles Service, Maintenance, or Equipment Cleaning Area		

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

	<input type="checkbox"/> Road Salt Storage and Loading Areas (exposed to rainwater)	
	<input type="checkbox"/> Outdoor Storage and Loading/Unloading of Hazardous Substances	
3. STORMWATER INDUSTRIAL PERMITTING		
	<input type="checkbox"/> The site is associated with existing or proposed activities that are considered Land Uses with Higher Potential Pollutant Loads (LUHPPLS) (see RICR 8.14.C)	Activities: Sector:
	<input type="checkbox"/> Construction is proposed on a site that is subject to <u>THE MULTI-SECTOR GENERAL PERMIT (MSGP) UNDER RULE 31(B)15 OF THE RIPDES REGULATIONS.</u>	MSGP permit #
	<input type="checkbox"/> Additional stormwater treatment is required by the MSGP Explain:	

REDEVELOPMENT STANDARD – MINIMUM STANDARD 6		
<input checked="" type="checkbox"/> Pre Construction Impervious Area		
	<input checked="" type="checkbox"/> Total Pre-Construction Impervious Area (TIA) 2.73 ac	
	<input checked="" type="checkbox"/> Total Site Area (TSA) 3.27 ac	
	<input checked="" type="checkbox"/> Jurisdictional Wetlands (JW) 0 sf	
	<input checked="" type="checkbox"/> Conservation Land (CL) 0 sf	
<input checked="" type="checkbox"/> Calculate the Site Size (defined as contiguous properties under same ownership)		
	<input checked="" type="checkbox"/> Site Size (SS) = (TSA) – (JW) – (CL) 3.27 ac	
	<input checked="" type="checkbox"/> (TIA) / (SS) = 83%	<input checked="" type="checkbox"/> (TIA) / (SS) >0.4?
<input checked="" type="checkbox"/> YES, Redevelopment		

PART 3. SUMMARY OF REMAINING STANDARDS

GROUNDWATER RECHARGE – MINIMUM STANDARD 2

YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	The project has been designed to meet the groundwater recharge standard.
<input type="checkbox"/>	<input type="checkbox"/>	If “No,” the justification for groundwater recharge criterion waiver has been explained in the Narrative (e.g., threat of groundwater contamination or physical limitation), if applicable (see RICR 8.8.D);
<input type="checkbox"/>	<input type="checkbox"/>	Your waiver request has been explained in the Narrative, if applicable.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is this site identified as a Regulated Facility in Part 1, Minimum Standard 8: LUHPPL Identification?
<input type="checkbox"/>	<input type="checkbox"/>	If “Yes,” has approval for infiltration by the Office of Waste Management Site Project Manager, per Part 1, Minimum Standard 8, been requested?

TABLE 2-1: Summary of Recharge (see RISDISM Section 3.3.2)

(Add or Subtract Rows as Necessary)

Design Point	Impervious Area Treated (sq ft)	Total Re _v Required (cu ft)	LID Stormwater Credits (see RISDISM Section 4.6.1)	Recharge Required by Remaining BMPs (cu ft)	Recharge Provided by BMPs (cu ft)
			Portion of Re _v directed to a QPA (cu ft)		
Coastal Water South	10,200*	213	0	213	600
TOTALS:					

Notes:

- Only BMPs listed in RISDISM Table 3-5 “List of BMPs Acceptable for Recharge” may be used to meet the recharge requirement.
- Recharge requirement must be satisfied for each waterbody ID.

* Refer to Redevelopment Area Calculations

- Indicate where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.):

Accompanying Redevelopment and Sand filter sizing calculations.

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

WATER QUALITY – MINIMUM STANDARD 3		
YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does this project meet or exceed the required water quality volume WQv (see RICR 8.9.E-I)?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is the proposed final impervious cover greater than 20% of the disturbed area (see RICR 8.9.E-I)? If “Yes,” either the Modified Curve Number Method or the Split Pervious/Impervious method in Hydro-CAD was used to calculate WQv; or, If “Yes,” either TR-55 or TR-20 was used to calculate WQv; and, If “No,” the project meets the minimum WQv of 0.2 watershed inches over the entire disturbed area. Not Applicable
<input type="checkbox"/>	<input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Does this project meet or exceed the ability to treat required water quality flow WQf (see RICR 8.9.I.1-3)?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does this project propose an increase of impervious cover to a receiving water body with impairments? If “Yes,” please indicate below the method that was used to address the water quality requirements of no further degradation to a low-quality water.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	RICR 8.36. A Pollutant Loading Analysis is needed and has been completed.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	The Water Quality Guidance Document (Water Quality Goals and Pollutant Loading Analysis Guidance for Discharges to Impaired Waters) has been followed as applicable.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	BMPs are proposed that are on the approved technology list . If “Yes,” please provide all required worksheets from the manufacturer.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Additional pollutant-specific requirements and/or pollutant removal efficiencies are applicable to the site as the result of a TMDL, SAMP, or other watershed-specific requirements. If “Yes,” please describe:

TABLE 3-1: Summary of Water Quality (see RICR 8.9)

Design Point and WB ID	Impervious area treated (sq ft)	Total WQv Required (cu ft)	LID Stormwater Credits (see RICR 8.18)	Water Quality Treatment Remaining (cu ft)	Water Quality Provided by BMPs (cu ft)
			WQv directed to a QPA (cu ft)		
Coastal Waters	10,200	850	0	850	850
TOTALS:					
<u>Notes:</u>					
1. Only BMPs listed in RICR 8.20 and 8.25 or the Approved Technologies List of BMPs is Acceptable for Water Quality treatment.					
2. For each Design Point, the Water Quality Volume Standard must be met for each Waterbody ID.					
<input checked="" type="checkbox"/> YES	This project has met the setback requirements for each BMP.				
<input type="checkbox"/> NO	If “No,” please explain:				
<input type="checkbox"/>	Indicate where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.): Accompanying Redevelopment and Sand filter sizing calculations.				

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

CONVEYANCE AND NATURAL CHANNEL PROTECTION (RICR 8.10) – MINIMUM STANDARD 4		
YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is this standard waived? If “Yes,” please indicate one or more of the reasons below:
		<input checked="" type="checkbox"/> The project directs discharge to a large river (i.e., 4th-order stream or larger. See RISDISM Appendix I for State-wide list and map of stream orders), bodies of water >50.0 acres in surface area (i.e., lakes, ponds, reservoirs), or tidal waters. <input type="checkbox"/> The project directs is a small facility with impervious cover of less than or equal to 1 acre. <input type="checkbox"/> The project has a post-development peak discharge rate from the facility that is less than 2 cfs for the 1-year, 24-hour Type III design storm event (prior to any attenuation). (<u>Note</u> : LID design strategies can greatly reduce the peak discharge rate).
<input type="checkbox"/>	<input type="checkbox"/>	Conveyance and natural channel protection for the site have been met. If “No,” explain why:

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

OVERBANK FLOOD PROTECTION (RICR 8.11) AND OTHER POTENTIAL HIGH FLOWS – MINIMUM STANDARD 5		
YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is this standard waived? If yes, please indicate one or more of the reasons below:
	<input checked="" type="checkbox"/>	The project directs discharge to a large river (i.e., 4th-order stream or larger. See Appendix I for state-wide list and map of stream orders), bodies of water >50.0 acres in surface area (i.e., lakes, ponds, reservoirs), or tidal waters.
	<input type="checkbox"/>	A Downstream Analysis (see RICR 8.11.D and E) indicates that peak discharge control would not be beneficial or would exacerbate peak flows in a downstream tributary of a particular site (e.g., through coincident peaks).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does the project flow to an MS4 system or subject to other stormwater requirements? If “Yes,” indicate as follows:
	<input type="checkbox"/>	RIDOT
	<input type="checkbox"/>	Other (specify):
Note: The project could be approved by RIDEM but not meet RIDOT or Town standards. RIDOT’s regulations indicate that post-volumes must be less than pre-volumes for the 10-yr storm at the design point entering the RIDOT system. If you have not already received approval for the discharge to an MS4, please explain below your strategy to comply with RIDEM and the MS4.		
		Indicate below which model was used for your analysis. <input type="checkbox"/> TR-55 <input type="checkbox"/> TR-20 <input type="checkbox"/> HydroCAD <input type="checkbox"/> Bentley/Haestad <input type="checkbox"/> Intellisolve <input type="checkbox"/> Other (Specify):
YES	NO	
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does the drainage design demonstrate that flows from the 100-year storm event through a BMP will safely manage and convey the 100-year storm? If “No,” please explain briefly below and reference where in the application further documentation can be found (i.e., name of report/document, page numbers, appendices, etc.): BMPs for WQ only. Excess water flows directly to hardened man-made coastal features.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Do off-site areas contribute to the sub-watersheds and design points? If “Yes,”
<input type="checkbox"/>	<input type="checkbox"/>	Are the areas modeled as “present condition” for both pre- and post-development analysis?
<input type="checkbox"/>	<input type="checkbox"/>	Are the off-site areas shown on the subwatershed maps?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Does the drainage design confirm safe passage of the 100-year flow through the site for off-site runoff?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is a Downstream Analysis required (see RICR 8.11.E.1)?
<input type="checkbox"/>	<input type="checkbox"/>	Calculate the following:
	<input checked="" type="checkbox"/>	Area of disturbance within the sub-watershed (areas) 0.87
	<input checked="" type="checkbox"/>	Impervious cover (%) 90%
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is a dam breach analysis required (earthen embankments over six (6) feet in height, or a capacity of 15 acre-feet or more, and contributes to a significant or high hazard dam)?
<input type="checkbox"/>	<input type="checkbox"/>	Does this project meet the overbank flood protection standard?

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

Table 5-2 Summary of Best Management Practices

BMP ID	DP #	BMP Type (e.g., bioretention, tree filter)	BMP Functions					Bypass Type	Horizontal Setback Criteria are met per RICR 8.21.B.10, 8.22.D.11, and 8.35.B.4		
			Pre-Treatment (Y/N/NA)	Re _v	WQ _v	CP _v (Y/N/NA)	Overbank Flood Reduction (Y/N/NA)		External (E) Internal (I) or NA	Yes/No	Technical Justification (Design Report page number)
1		Sand filter	Y	600	850	n/a	n/a	n/a	Y		n/a
		TOTALS:									

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

Table 5.3 Summary of Soils to Evaluate Each BMP									
DP #	BMP ID	BMP Type (e.g., bioretention, tree filter)	Soils Analysis for Each BMP						
			Test Pit ID# and Ground Elevation		SHWT Elevation (ft)	Bottom of Practice Elevation* (ft)	Separation Distance Provided (ft)	Hydrologic Soil Group (A, B, C, D)	Exfiltration Rate Applied (in/hr)
			Primary	Secondary					
1		Sand filter	Tidal	Tidal	1+/-	5.5	4.5	C	1.02
		TOTALS:							

* For underground infiltration systems (UICs) bottom equals bottom of stone, for surface infiltration basins bottom equals bottom of basin, for filters bottom equals interface of storage and top of filter layer

LAND USES WITH HIGHER POTENTIAL POLLUTANTS LOADS (LUHPPLs) – MINIMUM STANDARD 8			
YES	NO	N/A	
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Describe any LUHPPLs identified in Part 1, Minimum Standard 8, Section 2. If not applicable, continue to Minimum Standard 9.
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Are these activities already covered under an MSGP? If “No,” please explain if you have applied for an MSGP or intend to do so?
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	List the specific BMPs that are proposed for this project that receive stormwater from LUHPPL drainage areas. These BMP types must be listed in RISDISM Table 3-3, “Acceptable BMPs for Use at LUHPPLs.” Please list BMPs:
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	Additional BMPs, or additional pretreatment BMP’s if any, that meet RIPDES MSGP requirements; Please list BMPs:
			Indicate below where the pertinent calculations and/or information for the above items are provided (i.e., name of report/document, page numbers, appendices, etc.).

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

ILLCIT DISCHARGES – MINIMUM STANDARD 9			
Illicit discharges are defined as unpermitted discharges to Waters of the State that do not consist entirely of stormwater or uncontaminated groundwater, except for certain discharges identified in the RIPDES Phase II Stormwater General Permit.			
YES	NO	N/A	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have you checked for illicit discharges?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Have any been found and/or corrected? If “Yes,” please identify.
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Does your report explain preventative measures that keep non-stormwater discharges out of the Waters of the State (during and after construction)?

SOIL EROSION AND SEDIMENT CONTROL (SESC) – MINIMUM STANDARD 10			
YES	NO	N/A	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have you included a Soil Erosion and Sediment Control Plan Set and/or Complete Construction Plan Set?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Have you provided a separately-bound document based upon the SESC Template ? If yes, proceed to Minimum Standard 11 (the following items can be assumed to be addressed).
If “No,” include a document with your submittal that addresses the following elements of an SESC Plan:			
<input type="checkbox"/>	Soil Erosion and Sediment Control Plan Project Narrative, including a description of how the fifteen (15) Performance Criteria have been met:		
<input type="checkbox"/>	Provide Natural Buffers and Maintain Existing Vegetation		
<input type="checkbox"/>	Minimize Area of Disturbance		
<input type="checkbox"/>	Minimize the Disturbance of Steep Slopes		
<input type="checkbox"/>	Preserve Topsoil		
<input type="checkbox"/>	Stabilize Soils		
<input type="checkbox"/>	Protect Storm Drain Inlets		
<input type="checkbox"/>	Protect Storm Drain Outlets		
<input type="checkbox"/>	Establish Temporary Controls for the Protection of Post-Construction Stormwater Control Measures		
<input type="checkbox"/>	Establish Perimeter Controls and Sediment Barriers		
<input type="checkbox"/>	Divert or Manage Run-On from Up-Gradient Areas		
<input type="checkbox"/>	Properly Design Constructed Stormwater Conveyance Channels		
<input type="checkbox"/>	Retain Sediment On-Site		
<input type="checkbox"/>	Control Temporary Increases in Stormwater Velocity, Volume, and Peak Flows		
<input type="checkbox"/>	Apply Construction Activity Pollution Prevention Control Measures		
<input type="checkbox"/>	Install, Inspect, and Maintain Control Measures and Take Corrective Actions		
<input type="checkbox"/>	Qualified SESC Plan Preparer’s Information and Certification		
<input type="checkbox"/>	Operator’s Information and Certification; if not known at the time of application, the Operator must certify the SESC Plan upon selection and prior to initiating site activities		
<input type="checkbox"/>	Description of Control Measures, such as Temporary Sediment Trapping and Conveyance Practices, including design calculations and supporting documentation, as required		

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

STORMWATER MANAGEMENT SYSTEM OPERATION, MAINTENANCE, AND POLLUTION PREVENTION PLAN – MINIMUM STANDARDS 7 AND 9		
Operation and Maintenance Section		
YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Have you minimized all sources of pollutant contact with stormwater runoff, to the maximum extent practicable?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Have you provided a separately-bound Operation and Maintenance Plan for the site and for all of the BMPs, and does it address each element of RICR 8.17 and RISDISM Appendix C and E?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Lawn, Garden, and Landscape Management meet the requirements of RISDISM Section G.7? If “No,” why not?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Is the property owner or homeowner’s association responsible for the stormwater maintenance of all BMP’s? If “No,” you must provide a legally binding and enforceable maintenance agreement (see RISDISM Appendix E, page 26) that identifies the entity that will be responsible for maintenance of the stormwater. Indicate where this agreement can be found in your report (i.e., name of report/document, page numbers, appendices, etc.).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Do you anticipate that you will need legal agreements related to the stormwater structures? (e.g. off-site easements, deed restrictions, covenants, or ELUR per the Remediation Regulations). If “Yes,” have you obtained them? Or please explain your plan to obtain them:
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Is stormwater being directed from public areas to private property? If “Yes,” note the following: <u>Note:</u> This is not allowed unless a funding mechanism is in place to provide the finances for the long-term maintenance of the BMP and drainage, or a funding mechanism is demonstrated that can guarantee the long-term maintenance of a stormwater BMP by an individual homeowner.
Pollution Prevention Section		
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Designated snow stockpile locations?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Trash racks to prevent floatables, trash, and debris from discharging to Waters of the State?
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Asphalt-only based sealants?
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Pet waste stations? (<u>Note:</u> If a receiving water has a bacterial impairment, and the project involves housing units, then this could be an important part of your pollution prevention plan).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Regular sweeping? Please describe: Recommended twice a year sweeping of paved parking lot.
<input type="checkbox"/>	<input checked="" type="checkbox"/>	De-icing specifications, in accordance with RISDISM Appendix G. (NOTE: If the groundwater is GAA, or this area contributes to a drinking water supply, then this could be an important part of your pollution prevention plan).
<input type="checkbox"/>	<input checked="" type="checkbox"/>	A prohibition of phosphate-based fertilizers? (<u>Note:</u> If the site discharges to a phosphorus impaired waterbody, then this could be an important part of your pollution prevention plan).

Subwatershed and Impervious Area Summary				
Subwatershed (area to each design point)	First Receiving Water ID or MS4	Area Disturbed (units)	Existing Impervious (units)	Proposed Impervious (units)
DP-1: Coastal Water	RI0010043E-06B	38,000 sf	38,000 sf	34,000 sf
DP-2:				
DP-3:				
DP-4:				
TOTALS:				

Stormwater Management, Design, and Installation Rules (250-RICR-150-10-8)

Site Construction Plans (Indicate that the following applicable specifications are provided)		
YES	NO	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing and proposed plans (scale not greater than 1" = 40') with North arrow
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Existing and proposed site topography (with 1 or 2-foot contours); 10-foot contours accepted for off-site areas
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Boundaries of existing predominant vegetation and proposed limits of clearing
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Site Location clarification
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Location and field-verified boundaries of resource protection areas such as: <ul style="list-style-type: none"> ▶ freshwater and coastal wetlands, including lakes and ponds ▶ coastal shoreline features Perennial and intermittent streams, in addition to Areas Subject to Storm Flowage (ASSFs)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	All required setbacks (e.g., buffers, water-supply wells, septic systems)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Representative cross-section and profile drawings, and notes and details of structural stormwater management practices and conveyances (i.e., storm drains, open channels, swales, etc.), which include: <ul style="list-style-type: none"> ▶ Location and size of the stormwater treatment practices (type of practice, depth, area). Stormwater treatment practices (BMPs) must have labels that correspond to RISDISM Table 5-2; ▶ Design water surface elevations (applicable storms); ▶ Structural details of outlet structures, embankments, spillways, stilling basins, grade-control structures, conveyance channels, etc.; ▶ Existing and proposed structural elevations (e.g., inverts of pipes, manholes, etc.); ▶ Location of floodplain and, if applicable, floodway limits and relationship of site to upstream and downstream properties or drainage that could be affected by work in the floodplain; ▶ Planting plans for structural stormwater BMPs, including species, size, planting methods, and maintenance requirements of proposed planting
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Logs of borings and/or test pit investigations along with supporting soils/geotechnical report and corresponding water tables
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Mapping of any OWM-approved remedial actions/systems (including ELURs)
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Location of existing and proposed roads, buildings, and other structures including limits of disturbance; <ul style="list-style-type: none"> ▶ Existing and proposed utilities (e.g., water, sewer, gas, electric) and easements; ▶ Location of existing and proposed conveyance systems, such as grass channels, swales, and storm drains, and location(s) of final discharge point(s) (wetland, waterbody, etc.); ▶ Cross sections of roadways, with edge details such as curbs and sidewalks; ▶ Location and dimensions of channel modifications, such as bridge or culvert crossings
<input checked="" type="checkbox"/>	<input type="checkbox"/>	Locations, cross sections, and profiles of all stream or wetland crossings and their method of stabilization